

Red Blood Cells

Red blood cells are called erythrocytes and deliver oxygen to the tissues and return carbon dioxide from the tissues to the lungs. They are released from the bone marrow with a life span of 120 days. Unlike most cells of the body, mature red cells do not contain a nucleus. There are three reasons for this:

- The main function of a red blood cell is the transport of oxygen and carbon dioxide. The presence of a nucleus would decrease the amount of space available to these gases.
- The nucleus of a cell has a certain mass. Nucleated red blood cells would add significantly to the weight of the blood and increase the workload of the heart by about 20%.
- Red cells are fully differentiated and do not require a nucleus to carry out the function of transporting oxygen and carbon dioxide.

The primary function of carrying oxygen is made possible by a chemically complex protein called hemoglobin. During circulation of blood through the lungs, hemoglobin becomes almost fully saturated with oxygen, making the blood bright red. As red cells perfuse the capillary beds of tissues and organs, oxygen is released from the hemoglobin into the tissues.

Because the main function of hemoglobin is the transport of oxygen from the lungs to the tissues, the concentration of this substance in a patient is a matter of concern. Almost all body functions depend on the oxygen transport capability of the blood. When the hemoglobin concentration is low, tissues, may not receive an adequate amount of oxygen and, over time, this presents problems. Inadequate oxygen supply to tissues results in poor healing of tissue and can cause complications such as an increased workload on the heart.

Red blood cells are flexible, concave disks. This shape gives the red cell a maximum surface area, facilitating the transfer of gases into and out of the cell. The flexibility of the cell also enables it to easily undergo the changes in shape necessary for travel through the capillaries of the body. (Capillaries are only slightly larger than red blood cells.)

